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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,485	02/28/2002	Tomohiro Nakajima	220084US2	6148
22850 7590 01/03/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER SAFAIPOUR, HOUSHANG	
			ART UNIT 2625	PAPER NUMBER
			NOTIFICATION DATE 01/03/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/084,485

Applicant(s)

NAKAJIMA, TOMOHIRO

Examiner

Houshang Safaipoor

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-91 is/are pending in the application.
- 4a) Of the above claim(s) 92-130 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-49, 60, 71 and 81 is/are rejected.
- 7) ☒ Claim(s) 50-59, 61-70, 72-80 and 82-91 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 09/07 and 10/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Response to Amendment

Applicant's amendment filed on October 12, 2007 has been considered and made of record.

Response to Arguments

Applicant arguments with respect to the rejection of the claims have been considered but are moot in view of the new grounds of rejection necessitated by applicant's amendment of the claims.

On page 29 of the remarks, with respect to independent claims 1, 37, 60, 71 and 81, applicant argues that Sonehara "does not cause the moving mirror to oscillate in first and second opposite directions." Furthermore, on page 30, applicant argues that the moving mirror disclosed by Sonehara "is not the claimed movable mirror that is swingably supported by a rotary shaft" and "the movable mirror 305 is a linear movable mirror." New reference by Ubhayakar (4,953,961) discloses a positioning device permitting the mirror to be oriented at any skewed angle. Ubhayakar introduces an apparatus illustrated in fig. 1 that includes mirror 5, which is movably mounted and is supported by positioning device 7 as represented by coupling (shaft) 9 (fig. 1, col. 3, lines 31-39). Tilting the mirror to "any skewed angle" indicates changing mirror position (swinging) in different direction to obtain the desired angle. With this explanation, examiner uses the new reference for rejection of all the claims argued and amended by the applicant with respect to the linear movement of the mirror disclosed by Sonehara. Regarding claim 37, applicant argues that Shimada fails to disclose light emission period with respect to

primary scanning direction to be “minimized in a vicinity of a center of an image.” (page 31, second paragraph). He further argues that in Shimada’s reference “scanning speed increases as it goes from the center toward the end on the scanned surface.” New reference by Schoon (4,586,057) teaches a circuitry for a laser printer where “the velocity of the movement of the scanning mirror 3, however, is sinusoidal so the scan at each end portion of a scan line is carved out at a velocity that is less than the velocity during the center portion of the scan.” (col. 3, lines 9-13). With this explanation, examiner uses the new reference for rejection of all the claims argued and amended by the applicant with respect to the linear movement of the mirror disclosed by Shimada.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1- 3, 8, 13, 49 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) in view of Ubhayakar (US 4,953,961) and further in view of Shimada et al (US 4,760,251).

For claims 1, 13, 49 and 60 Sonehara discloses an optical scanning module comprising: a light-emission source (406) configured to emit a light beam; a movable mirror (415) configured to reflect the light beam. Sonehara does not explicitly disclose that the movable mirror is

swingably supported by a rotary shaft.; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions. Ubhayakar teaches a positioning device permitting the movable mirror to be oriented at any skewed angle. Ubhayakar introduces an apparatus illustrated in fig. 1 that includes mirror 5, which is movably mounted and supported by positioning device 7 as represented by coupling (shaft) 9 (fig. 1, col. 3 lines 31-39). Tilting the mirror to "any skewed angle" indicates changing mirror position (swinging) in different direction to obtain the desired angle. Therefore it would have been obvious to a person of ordinary skill in the art to use such configuration in Sonehara's apparatus for movement of the mirror for reflection of the light.

Combination of Sonehara and Ubhayakar does not expressly disclose wherein a frequency of pixel information supplied to said light-emission source varies in accordance with a primary scanning portion of each pixels. Shimada discloses a frequency of pixel information supplied to said light-emission source varies in accordance with a primary scanning portion of each pixels (Col 7 Lines 3-Col 8 Line 27).

Sonehara, Ubhayakar & Shimada are combinable because they are from the same field of endeavor, optical scanners.

Therefore, it would have been obvious to combine Shimada with Sonehara and Ubhayakar to obtain the invention as specified in claim 1.

For claim 2, Shimada teaches The optical scanning module as claimed in claim 1, further comprising a detection part configured to detect a displacement of said movable mirror, wherein a frequency modulation section is set to start after a given period of time passes since a detection signal is obtained from said detection part; and a frequency causing said light-

emission source to emit light is varied within the frequency modulation section (Col 8 Lines 19-27).

For claim 3, Shimada teaches the optical scanning module as claimed in claim 2, wherein a start timing of the frequency modulation section is varied based on the detection signal obtained from said detection part (Col 8 Lines 28-38).

For claim 8, Sonehara teaches a detection part configured to detect a displacement of said movable mirror (Col 8 Lines 19-27); and Shimada teaches a variable output setting part that sets a frequency variation section so that the frequency variation section starts after a given period of time passes since a detection signal is obtained from said detection part, and that is configured to vary a light-emission output of said light-emission source in accordance with the primary scanning position (Col 7 Lines 3-Col 8 Line 27).

3. Claims 37-39 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ubhayakar (US 4,953,961) and in view of Schoon (US 4,586,057) and further in view of Shimada et al (US 4,760,251).

For claims 37 and 81, Ubhayakar discloses an optical scanning module comprising: a light-emission source configured to emit a light beam (fig. 1); a movable mirror (5). Ubhayakar teaches a positioning device permitting the movable mirror to be oriented at any skewed angle. Ubhayakar introduces an apparatus illustrated in fig. 1 that includes mirror 5, which is movably mounted and supported by positioning device 7 as represented by coupling (shaft) 9 (fig. 1, col. 3

lines 31-39). Tilting the mirror to “any skewed angle” indicates changing mirror position (swinging) in different direction to obtain the desired angle.

Ubhayakar does not expressly disclose wherein a light emission period forming one pixel on a scanned surface is varied with respect to a primary scanning direction to be minimized in a vicinity of a center of an image so that a light- emission interval between each of pixels forming pixel information is minimized in the vicinity of the center of the image.

Schoon teaches a circuitry where “the velocity of the movement of the scanning mirror 3, however, is sinusoidal so the scanning at each end portion of a scan line is carried out at a velocity that is less than the velocity during the center portion of a scan.” (col. 3 lines 9-13, and please refer to the discussion under Response to the Argument).

Ubhayakar & Schoon are combinable because they are from the same field of endeavor, optical scanners.

The suggestion/motivation for doing so would have been to correct image-scanning frequency, as taught by Schoon.

Therefore, it would have been obvious to combine Schoon with Ubhayakar to obtain the invention as specified.

Regarding claim 38, Shimada teaches the optical scanning module as claimed in claim 37, further comprising a detection part that detects a displacement of said movable mirror, wherein a frequency modulation section is set to start after a given period of time passes

since a detection signal is obtained from said detection part; and a frequency causing said light-emission source to emit light is varied within the frequency modulation section (Col 8 Lines 19-27).

Considering claim 39, Shimada teaches the optical scanning module as claimed in claim 38, wherein a start timing of the frequency modulation section is varied based on the detection signal obtained from said detection part (Col 8 Lines 28-38).

4. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ubhayakar (US 4,953,961) and in view of Schoon (US 4,586,057) and further in view of Shimada et al (US 4,760,251) and further in view of Sonehara (US 6,388,697) .

Regarding claim 44, Sonehara teaches a detection part that detects a displacement of said movable mirror (Col 8 Lines 19-27); and Shimada teaches a variable output setting part that sets a frequency Variation section so that the frequency variation section starts after a given period of time passes since a detection signal is obtained from said detection part, and varies a light-emission output of said light-emission source in accordance with the primary scanning position (Col 7 Lines 3-Col 8 Line 27).

5. Claims 4-5, 10, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and in view of Ubhayakar (US 4,953,961) .

Regarding claims 4, 5, 10, 40, 41 and 46, Sonehara does not disclose expressly wherein said movable mirror driving part varies an amplitude of said movable mirror so that a predetermined detection signal value may be obtained in said detection part.

Ubhayakar teaches varying the amplitude (displacement) of the movable mirror to obtain the desired angle.

Sonehara and Ubhayakar are combinable because they are from the same field of endeavor, optical scanners.

The suggestion/motivation for doing so would have been to generate a driving force for the movable mirror, as taught by Ubhayakar.

Therefore, it would have been obvious to combine Sonehara and Ubhayakar to obtain the invention as specified in claim 4.

6. Claims 9 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Ubhayakar (US 4,953,961) and further in view of Plesko (US 5,596,442).

Sonehara and Ubhayakar disclose an optical scanning module as described above. Sonehara and Ubhayakar do not expressly disclose wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period.

Plesko discloses wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period (Fig 11; Col 7 Lines 46-53).

Sonehara, Ubhayakar & Plesko are combinable because they are from the same field of endeavor, scanners.

The suggestion/motivation for doing so would have been to produce patterns to eliminate the need for scanner reading equipment, as taught by Plesko.

Therefore, it would have been obvious to combine Sonehara and Ubhayakar with Plesko to obtain the invention as specified in claim 9.

7. Claims 6, 7, 11, 18, 30, 43 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and in view of Ubhayakar (US 4,953,961) and further in view of Konno (US 5,767,955).

Regarding claims 7 and 43 combination of Sonehara and Ubhayakar discloses an optical scanning module comprising: a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions 404 (please refer to the discussion under claim 1).

Ubhayakar discloses that the said movable mirror driving part varies an amplitude of said movable mirror so that a predetermined detection signal value may be obtained in said detection part (please refer to the discussion under claim 4).

Konno discloses the optical scanning module as claimed in claim 4, wherein said movable mirror driving part stops driving said movable mirror if the predetermined detection signal value is prevented from being obtained in said detection part within a given time limit (Col 8 Line 66- Col 9 Line 12).

Sonehara, Ubhayakar and Konno are combinable because they are from the same field of endeavor, optical scanners.

The suggestion/motivation for doing so would have been having the benefit of a easuring the reflection point, as taught by Konno.

Therefore, it would have been obvious to combine Sonehara and Ubhayakar with Konno to obtain the invention as specified in claims 7 and 43.

Regarding claims 6, 11, 18 and 30 Sonehara and Ubhaykar disclose an optical scanning module as described above.

Sonehara and Ubhaykar do not disclose expressly wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period.

Konno discloses the optical scanning module as claimed in claim 4, wherein said movable mirror driving part stops driving said movable mirror if the predetermined detection signal value is prevented from being obtained in said detection part within a given time limit (Col 8 Line 66- Col 9 Line 12).

Sonehara, Ubhaykar and Konno are combinable because they are from the same field of endeavor, scanners.

The suggestion/motivation for doing so would have been having the benefit of a measuring the reflection point, as taught by Konno.

Therefore, it would have been obvious to combine Sonehara and Ubhaykar with Konno to obtain the invention as specified in claims 6, 11, 18 and 30.

Regarding claims 12, 42, 47 and 48, arguments analogous to those presented for claim 6 are applicable to claims 12, 42, 47 and 48.

Regarding claims 14-17, arguments analogous to those presented for claim 2-5 are applicable to claims 14-17 respectively.

Regarding claims 19-24, arguments analogous to those presented for claims 7-12 are applicable to claims 19-24 respectively.

Regarding claims 25 and 71, arguments analogous to those presented for claims 1 and 4 are applicable to claim 25.

Regarding claims 26-29, arguments analogous to those presented for claim 2-5 are applicable to claims 26-29 respectively.

Regarding claims 31-36, arguments analogous to those presented for claim 7-12 are applicable to claims 31-36 respectively.

Allowable Subject Matter

8. Claims 50-59, 61-70, 72-80 and 82-91 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Houshang Safaipoor whose telephone number is (571)272-7412. The examiner can normally be reached on Mon.-Fri. from 6:00am to 2:30pm.

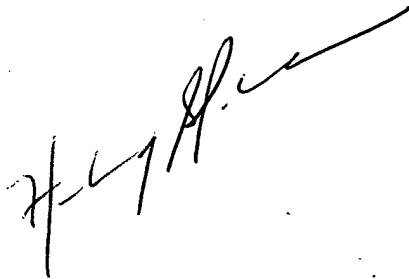
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571)272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Houshang Safaipoor
Patent Examiner
December 20, 2007

A handwritten signature in black ink, appearing to read 'H. Safaipoor', is written diagonally across the page.